

# Quiz 1 MTH 335 Fall 2024

Example 1.1.9

part (b):  $(y-2)y' + 4y = 9$

nonlinear  
↓ ↓  
⇓

$$y' = \frac{9}{y-2} - \frac{4y}{y-2}$$

autonomous ( $\Rightarrow$  separable!)

part (c):  $\frac{dA}{dt} = 10 - \frac{3A}{140-t}$

linear, not autonomous, not separable

part (d):  $\frac{dy}{dx} + 2xy^2 = xe^x$

not linear  
↑

$$\frac{dy}{dx} = \underbrace{xe^x - 2xy^2}$$

$$= x(e^x - 2y^2)$$

x's appear on right

↓  
not autonomous

can't separate x's from y's

⇓  
not separable